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Restoration and Reclamation of *Neltuma juliflora* (formerly *Prosopis juliflora*) Invaded Areas in Kenya

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Executive Summary:

Neltuma juliflora (formerly *Prosopis juliflora)* invasion of Kenya's Arid and Semi-Arid Lands (ASALs) has brought about serious environmental and socioeconomic problems. Prosopis was initially introduced to deal with fuelwood shortages and desertification, but it has since spread rapidly, displacing natural plants, decreasing biodiversity, and endangering pastoral peoples' means of subsistence. Its rapid expansion resulted in land-use conflicts, grazing land loss, and costly management costs.

This policy brief emphasizes how sustainable reclamation and restoration techniques are required to mitigate adverse effects and enhance economic potential of *N. juliflora*. It is essential to employ an integrated management strategy incorporating community-led initiatives, sustainable utilization practices, biological and mechanical control techniques, with strong policy backing.

Research should be expanded to:

- Create economic management plans and innovative uses for Prosopis;
- Examine ecological relationships between Prosopis and indigenous species in order to develop long-term restoration plans;
- Encourage use of alternative species for land reclamation and riverbank stabilization.

It is recommended to ensure that communities: earn more from selling regulated *N. juliflora* products; and local communities and key stakeholders are educated on how to manage and benefit from the species.

Following removal of *N. juliflora* weeds and land reclamation, efficient Prosopis management will contribute towards Kenya achieving; its Bottom-up Economic Transformation Agenda (BeTA) and the target of 30% tree cover by 2032, as well as improving ecological resilience and encouraging sustainable land use.

Background Information:

Neltuma juliflora (formerly *Prosopis juliflora)* was originally brought to Kenya in the 1970s to control soil erosion, combat desertification and supply fuelwood. Due to its invasive nature and lack of natural predators, *N. juliflora* has spread widely throughout ASAL counties including; Turkana, Tana River, Garissa, Baringo, and Marsabit. The species creates dense thickets that: outcompete indigenous vegetation posing a threat to biodiversity and food security; hinders access to water resources; and directly endangers people and animals with its sharp thorns.

Prosopis management efforts are hampered by; inadequate finance, poor policies, and minimal community engagement. To reconcile ecological preservation with sustainable land use, a well-organized restoration and reclamation strategy requires to be in place.

Purpose of the Policy Brief

This policy brief provides recommendations for restoration and reclamation of Kenyan regions invaded by Prosopis. The Policy Brief outlines; sustainable management approaches, ecological, economic, and social impacts of *N. juliflora.* To lessen the detrimental effects of Prosopis invasion and restore ecosystems that have been affected, the policy brief highlights control measures that incorporate sustainable utilization, community involvement, and policy reinforcement.

Analysis, Discussion, and Considerations

1. Ecological and Environmental Impact

- Invasion by Prosopis has caused significant ecological damage, such as disrupted hydrological cycles and reduced biodiversity.
- Prosopis thick canopy inhibits growth of indigenous flora hence a negative impact on traditional grazing areas and wildlife habitats.
- Invasions near water sources exacerbates water scarcity by increasing evapotranspiration rates and reducing groundwater recharge.

Rangelands invaded by Neltuma juliflora thickets

2. Socioeconomic Implications

- Prosopis has economic potential through production of wood, charcoal, briquettes, biochar, fodder, timber, and woodcarvings.
- However, uncontrolled exploitation can worsen environmental damage, thus in order to strike a balance between financial gain and ecological restoration, sustainable harvesting for value-added processing is necessary.

Community groups learning briquette making at OSDA Garissa County

3. Current Control Measures and Challenges

- Current Prosopis control methods include: chemical treatment, and mechanical removal.
- Although the Kenya National Prosopis Management Strategy 2022-2032 (KNPMS) offers a framework for managing the species, difficulties still exist due to inadequate funding, a lack of long-term planning, and poor coordination.
- Effective management and control of the species is constrained by negative community attitudes and lack of incentives.

Project beneficiaries clearing Neltuma juliflora using pangas

4. Community Participation and Policy Frameworks

- Local communities are crucial to the management and control of Prosopis, and proposed initiatives are unlikely to be successful without their involvement.
- In order to achieve efficient implementation of control measures for existing invasive species, control policies must be strengthened and aligned with local governance structures.
- In order to promote community-led restoration and reclamation initiatives, training, awareness creation, and incentives ought to be provided.

Community participation in restoration activities

Communities planting Bamboo along River Tana Banks after removing Neltuma juliflora

Community groups planting grasses after clearing Neltuma juliflora invaded area

Policy Implications (Policy Options)

1. Integrated Management Approach

- To manage Prosopis while successfully restoring indigenous vegetation, combine mechanical (bulldozing, uprooting), and chemical management (herbicides like Triclopyr and Kaput) methods.
- To improve soil organic matter, restore biodiversity and soil fertility, and promote ecological balance, promote agroforestry systems as well as natural regeneration that integrate indigenous trees and grass species.

2. Economic Utilization and Livelihood Promotion

- Promote sustainable harvesting of Prosopis for animal feed, furniture, charcoal, and bioenergy to generate income.
- In order to curb the spread of Prosopis, encourage market-based solutions that provide economic benefits to communities.

3. Legislative and Institutional Strengthening

- To manage Prosopis, prevent its spread, and provide sustained funding for control efforts, policy frameworks should be strengthened.
- To effectively implement Prosopis related policies, improve coordination between both the national and county governments.

4. Community-Led Restoration Initiatives

- Encourage land reclamation in local communities by providing financial incentives, training, and alternate sources of income.
- Integrate community-driven restoration initiatives by implementing participatory land-use approaches and practices.

5. Research and Innovation

Provide funding for research to:

- Create economic management plans and innovative uses for Prosopis biomass, pods, and goods.
- Examine ecological relationships between Prosopis and indigenous species in order to develop long-term restoration plans.
- Encourage use of alternative species such as bamboo and grasses (vetiver and other native grasses) for land reclamation and riverbank stabilization.

Conclusion

Neltuma juliflora uncontrolled expansion in Kenya's ASALs poses serious socioeconomic and environmental problems. However, Kenya can recover degraded lands and create income by implementing a multi-stakeholder strategy that combines sustainable use with control measures. For Prosopis-infested areas to be successfully restored and managed sustainably, strong legislative support, increased community involvement, and sustained investment in research and innovation are essential.

Recommendations

- Develop and implement a national strategy for managing *Neltuma juliflora* that incorporates community-driven land restoration, sustainable use, and control operations.
- Provide more funding and technical assistance for mechanical and biological methods to control *N. juliflora* in heavily infested areas.
- Ensure that communities earn more from selling regulated *N. juliflora* products.
- Educate local communities and key stakeholders on how to manage and benefit from the plant.
- To guarantee better policy implementation, increase collaboration between the Government, academic institutions, research centers, and local communities.

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